15 Minute Precipitation Data Documentation (text and csv version)
September 2012

I. Description

15 Minute Precipitation Data (labeled Precipitation 15 Minute in Climate Data Online system) is a database that gives time-sequenced quarter-hour precipitation amounts for a network of over 3600 reporting station located primarily in the United States. Data is collected from a variety of sources including National Weather Service reporting stations, volunteer cooperative observers, Federal Aviation Administration (FAA), utility companies, etc.

Concerning rain gages/data processing: Data from Fischer-Porter gages between May 1971 and December 1983 have been used in this dataset. Precipitation values have been checked and edited as necessary by both automated and manual methods. Data processing procedures were updated in January 1984 to produce the element structured data base files and further enhanced beginning with the January 1996 data month. Currently, interactive quality control procedures are in place that has added many shecks and features and data are subjected to automated editing procedures that reduce the manual handling of the data.

II. Format/Record Layout

Data is output in a choice of two formats - text file (with .dat file extension) or as a spreadsheet ready file (with .csv extension). The .csv output uses the comma (",") as the delimiter.

Each observational element within the record is described below in order of appearance:

STATION: Cooperative identification number (i.e. COOP ID) identifying station. Each COOP ID is prefixed with "COOP ID: " and this is followed by the stations six-digit numeric identifier. The first two digits correspond to the state where the station is located (see table 1 below). A complete listing of station COOP IDs is located at ftp://ftp.ncdc.noaa.gov/pub/data/inventories/COOP.TXT.

STATION_NAME: Optional field. A name identifying the station location (usually a city/airport name). The maximum number of characters for this field is 50.

ELEVATION: Optional field given as part of geographic location output option. The elevation above mean seal level of the reporting site given to the nearest tenth of a meter. The maximum number of characters for this field is 10.

LATITUDE: Optional field given as part of geographic location output option. This value is given in decimated degrees to 4 decimal places. Northern hemisphere values are greater than 0. The maximum number of characters for this field is 10.

LONGITUDE: Optional field given as part of geographic location output option. This value is given in decimated degrees to 4 decimal places. Western hemisphere values are less than 0. The maximum number of characters for this field is 10.

DATE: This is the year of the record (4 digits), followed by month (2 digits), followed by day of the month (2 digits), followed by a space and ending with a time of observation that is a two digit indication of the local time hour, followed by a colon (:) followed by a two digit indication of the minute. Note: The subsequent data value will be for the 15 minute period ending at the time specified here. 14 characters.

QGAG: Gage translation data in units of gage weight for quarter-hour Fischer-Porter gage readings. Weights are converted to inches of precipitation to tenths. Element was added beginning with the January 1996 data. The values 9999 or 99999 means the data value is missing. The maximum number of characters for this field is 8. This element is selectable when using the Climate Data Online interface for creating data output file.

QPCP: The amount of precipitation recorded at the station for the 15 minute period ending at the time specified for DATE above given in hundredths of inches. Measurement precision is only to tenths of inches (data values will end in zero) when Units flag is set to HT (see Units flag definition below). Prior to January 1996 QPCP was the only observational element in this data set. The values 9999 or 99999 means the data value is missing. The maximum number of characters for this field is 8. This element is selectable when using the Climate Data Online interface for creating data output file.

Note that observational elements listed above that are identified as optional (station name, geographic location and flags) must be added to the data output by means of selecting the appropriate checkbox for them (seen when using the Climate Data Online interface).

Measurement Flag: defined in Table 2 below.

Quality Flag: defined in Table 3 below.

Units (Flag): HI indicates data values are measured and given in hundredths of inches. HT indicates data values are measured to the precision of tenths of inches but will still be given in hundredths of inches (values will end in zero).

III. Tables

Table 1 - State Code Table

01 Alabama
02 Arizona

03 Arkansas
04 California
05 Colorado
06 Connecticut
07 Delaware
08 Florida
09 Georgia
10 Idaho
11 Illinois
12 Indiana
13 Iowa
14 Kansas
15 Kentucky
16 Louisiana
17 Maine
18 Maryland
19 Massachusetts
20 Michigan
21 Minnesota
22 Mississippi
23 Missouri
24 Montana
25 Nebraska
26 Nevada
27 New Hampshire
28 New Jersey
29 New Mexico
30 New York
31 North Carolina
32 North Dakota
33 Ohio
34 Oklahoma
35 Oregon
36 Pennsylvania
37 Rhode Island
38 South Carolina
39 South Dakota
40 Tennessee
41 Texas
42 Utah
43 Vermont
44 Virginia
45 Washington
46 West Virginia
47 Wisconsin
48 Wyoming

49 Not used
50 Alaska
51 Hawaii
66 Puerto Rico
67 Virgin Islands
91 Pacific Islands

Table 2 - Data Measurement Flag

QPCP:

Note: This field is left blank when no flag is needed.

a: Begin accumulation. A data value of 99999 accompanies this flag. It indicates that the accumulation has begun at some time during the 15 minute period.

A: End accumulation (an amount is associated with this flag). It indicates that accumulation has ended sometime during the 15 minute period. Accumulated period indicates that the precipitation amount is correct, but only the exact beginning and ending times are known. A data value of 99999 occurring on the last day and hour of a month indicates the accumulation continues into the next month.

, (comma): Used at the beginning of a data month when an accumulation is in progress. This flag is used prior to 1984.

{ : Begin deleted period during the hour (inclusive).

}: End deleted period during the hour (inclusive).

[: Begin missing period during the hour (inclusive).

]: End missing period during the hour (inclusive).

E: Evaporation may have occurred. Data may or may not be reliable. This flag was used during the period 1984-1993.

g: Only used on day 1 when precipitation amount is zero.

T: Indicates a "trace" amount. Data value with this will be zero. "T" flags appear on National Weather Service data only.

M: Missing data. No data available for this period.

QGAG:

a: begin accumulation (indicates measurement periods overlapped)
A: end accumulation
[: begin missing
]: end missing
{: begin delete
}: end delete
S: gage reset

Table 3 - Data Quality Flag

QPCP:

X: Used for data prior to 1996 as part of a 1997 data rehabilitation effort. Indicates value failed an extreme value test; data are to be used with caution. Extreme tests were: 1) if the value was not an accumulated precipitation total, the value failed the one hour statewide 100 year return period precipitation and 2) if the value was an accumulated precipitation total, the value failed the 24 hour statewide extreme precipitation total.

Z: Indicates probable amounts as a result of melting frozen precipitation. This flag may be used to identify those sites that are deficient in the manner the snow shields are employed. Used since January 1996.

R: Indicates data values are suspect with regard to the times or period of occurrence. Used since January 1996.

Q: A single erroneous value (value will be present). Used since January 1996.

q: An hourly value excludes one or more 15 minute periods. Lowest data resolution is 15 minutes. Used since January 1996.

A: Accumulated period and amount. An accumulated period indicates that the precipitation amount is correct, but the exact beginning and ending times are only known to the extent that the precipitation occurred sometime withinn the accumulation period.

QGAG:

Q: Questionable value. Data not used.
P: Punched mechanism failure, missing punch assumed. Assumed punch value being used.
V: Evaporation likely. Gage value has dropped. Data are being used.